



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,504	01/27/2004	Yap-Peng Tan	8371-166	2519
46404	7590	10/31/2007		
MARGER JOHNSON & MCCOLLOM, P.C. - Sharp 210 SW MORRISON STREET, SUITE 400 PORTLAND, OR 97204			EXAMINER BAYAT, ALI	
			ART UNIT 2624	PAPER NUMBER
			MAIL DATE 10/31/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/765,504

Applicant(s)

TAN ET AL.

Examiner

Ali Bayat

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10 and 11 is/are allowed.
- 6) ☒ Claim(s) 1-9 and 12-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 1/27/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 5-9, 12 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Yuan (US 5,367,385).

In regard to claim 1 Yuan provides for a method for filtering image data corresponding to an image that are stored in a plurality of pixels, comprising: defining a plurality of base directions in terms of which any direction belonging in a plane of the image can be described (Fig.4 col.6 lines 34-45); identifying a first one of the pixels that stores image data corresponding to an image edge aligned with an identified one of the base directions (Fig.4 pixels 72,74, 80 and 86, col.6 lines 34-45); selecting a directional de-ringing filter having at least one main filter direction perpendicular with the identified base direction (Fig.'s 8a-8b, col.9 lines 20-28) ; and applying the selected directional de-ringing filter to the image data of at least a second one of the pixels (Fig.8b, col.9 lines 20-28).

With regard to claims 2 and 6 Yuan provides for a method, further comprising: selecting a plurality of directional edge detection masks, each having a mask direction associated with a respective one of the base directions (Fig.4 col.6 lines 34-45); and

Art Unit: 2624

applying the masks to at least some of the image data to identify the first pixel (Fig.8b, col.9 lines 20-28).

In regard to claim 5 see claim 1 above. It recites similar limitations as claim 5. Hence it is similarly analyzed and rejected.

As to claim 7 Yuan provides for a method further comprising: identifying a third one of the pixels that stores image data that does not correspond to an image edge that has the preset edge direction (Fig.4 pixels 76 and 70), and applying the selected directional de-ringing filter to the image data of the third pixel (Fig.4, col.6 lines 35-45).

With regard to claim 8 Yuan provides for selecting a group of pixels (Fig.4 see pixels 82,80,72 and 78, col.6 lines 34-45); selecting a first edge detection mask having a first mask direction (Fig.4 see pixels 82,80,72 and 78, col.6 lines 34-50, also note edge detector); convolving the image data of at least some of the selected pixels (Fig.4 pixels 82 and 80 belongs to portion 46 and pixels 72 and 78 belongs to portion 40) with the first edge detection mask to detect in a portion of the image corresponding to the group (Fig.4 see the vicinity of border line 60) a first edge having a component along the first mask direction (Fig.4 pixels 80 and 72, which are located in 45 degree line); and if an edge is thus detected (col.6 lines 47-50), applying to at least one of the selected pixels a directional de-ringing filter having a main direction perpendicular with the first mask direction (Fig.8b col.9 lines 24-30).

As to claim 9, see the rejection of claim 8. It recites similar limitations as claim 9. Hence it is similarly analyzed and rejected.

Art Unit: 2624

As to claim 12 Yuan provides for identifying a block of pixels containing image data corresponding to an edge having an edge direction (Fig.8a note block 40, see 45 degree edge direction); identifying one of the pixels whose unfiltered image data of a pixel (Fig.8a see pixels in line 98), and outputting the unfiltered image data of the pixel as the respective filtered image data (Fig.8a see pixels in line 98); selecting a directional de-ringing filter having a main direction that corresponds to the edge direction (Fig.8b col.9 lines 24-30) ; and applying the selected directional de-ringing filter to the image data of at least another one of the pixels to generate respective filtered image data (Fig.8b col.9 lines 24-30).

As to claim 14, see the rejection of claim 12. It recites similar limitations as claim 14. Hence it is similarly analyzed and rejected.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yuan (US 5,367,385) in view of Lee (US 6,226,050).

In regard to claim 13, Yuan does not provide for determining whether the image data of a pixel corresponds to an edge sharper than a preset threshold. Lee provide for

determining whether the image data of a pixel corresponds to an edge sharper than a preset threshold (col.2 lines 7-14). The prior arts of Yuan and Lee are combinable because they are from same field of endeavor (image processing for reducing boundary artifacts). It would have been obvious to a person of ordinary skill in the art at time the invention was made to incorporate the teaching of Lee with the system and method of Yuan. The suggestion/motivation for doing so would have been for reducing ringing noise, and a signal adaptive filter suitable for implementing this method. See the field of the invention.

Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yuan (US 5,367,385) in view of Doi et al. (US 5,343,390).

With regard to claim 3, Yuan does not specifically provide for computing the edge content in each of the base directions; and comparing the edge contents of each direction to each other. Doi provides for computing the edge content in each of the base directions; and comparing the edge contents of each direction to each other (col.13 line 64-col.14 line7, note edge gradient values corresponds to sharp edges). The prior arts of Yuan and Doi are combinable because they are from same field of endeavor (image processing for reducing boundary artifacts). It would have been obvious to a person of ordinary skill in the art at time the invention was made to incorporate the teaching of Doi with the system and method of Yuan. The suggestion/motivation for doing so would have been for eliminating the possibility of false-positives due to these artifacts, such sharp-edges. ROIs also need to be eliminated, see col.7 lines 20-25 of Doi.

In regard to claim 4, Yuan does not specifically provide for Determining a maximum edge content statistic; and comparing the determined maximum edge content statistic to threshold smoothness. Doi provides for determining a maximum edge content statistic; and comparing the determined maximum edge content statistic to a threshold smoothness (col.13 line 64-col.14 line7). The prior arts of Yuan and Doi are combinable because they are from same field of endeavor (image processing for reducing boundary artifacts). It would have been obvious to a person of ordinary skill in the art at time the invention was made to incorporate the teaching of Doi with the system and method of Yuan. The suggestion/motivation for doing so would have been for eliminating the possibility of false-positives due to these artifacts, such sharp-edges ROIs also need to be eliminated, see col.7 lines 20-25 of Doi.

Allowable Subject Matter

3. Claims 10 and 11 are allowed.

Reasons For Allowance

4. The following is an examiner's statement of reasons for allowance: the prior art of Yuan failed to teach or suggest either alone or in combination, for comparing the horizontal edge content to the vertical edge content; classifying the portion of the image as containing a horizontal edge if the horizontal edge content is larger than the vertical edge content, else classifying the portion of the image as a vertical edge, if the vertical edge content is larger than horizontal edge content; and if the portion of the image is classified as a containing a horizontal edge, applying a directional de-ringing filter having a vertical main direction to at least a first one of the selected pixels, else if the

Art Unit: 2624

portion of the image is classified as a containing a vertical edge applying a directional de-ringing filter having a horizontal main direction to at least a second one of the pixels in the block. As cited in independent Claim 10.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Contact Information

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ali Bayat whose telephone number is 571-272-7444.

The examiner can normally be reached on M-F 9:00 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on 571-272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2624

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ali Bayat *AB*
Patent Examiner
Division 2624
10/24/07



MATTHEW C. BELLA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600